

Chapter 3 - Linear Equations and Functions

3.4 Objective: To solve systems of equations in two variables.

Agenda

- 1) Take out HW to be checked
- 2) DO NOW
- 4) Stations :System of Equations LINKS
 - Each group member will fill out his/her own sheet
 - at the end of class I will **randomly** select **one** sheet from **one** group member and **grade** it. **This grade will be given to each group member.**

*Remember the circles activity- no one is done unless everyone is done!

HW: Finish LINKS Sheets

DO NOW

$$\begin{aligned} 1) \quad & x + 3y = 1 \\ & -3x - 3y = -15 \end{aligned}$$

$$\begin{aligned} 2) \quad & -3x + 3y = 4 \\ & y = x + 3 \end{aligned}$$

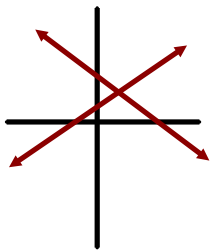
$$\begin{aligned} 3) \quad & 2x + 8y = 6 \\ & -5x - 20y = -15 \end{aligned}$$

So...
There are three possible
outcomes:

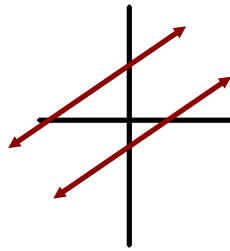
A solution to a system of equations is:

- 1) The point(s) where the graphs intersect.
(The point(s) lying on BOTH lines.)
- 2) The point(s) (x,y) that make BOTH equations true when plugged in.

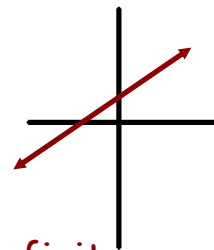
For systems of linear equations,
there are 3 possibilities:



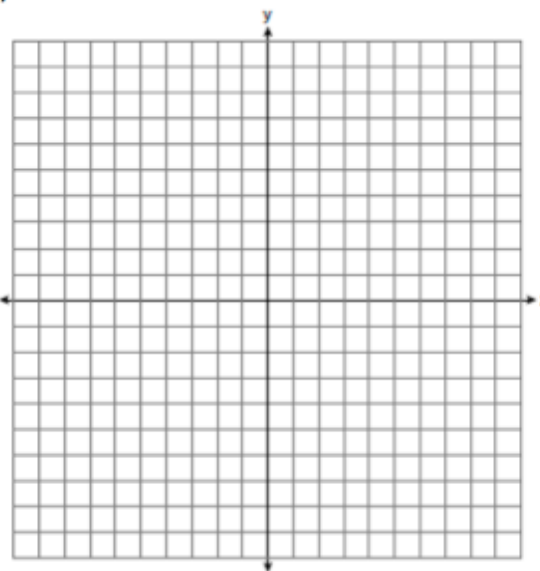
1 solution
Intersecting lines

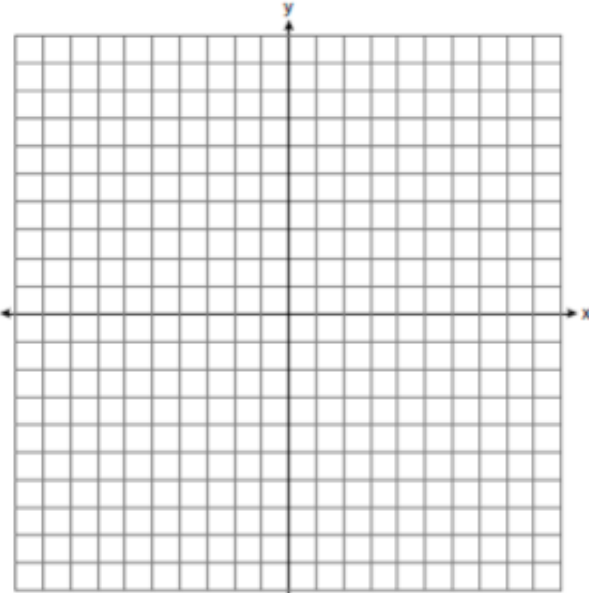


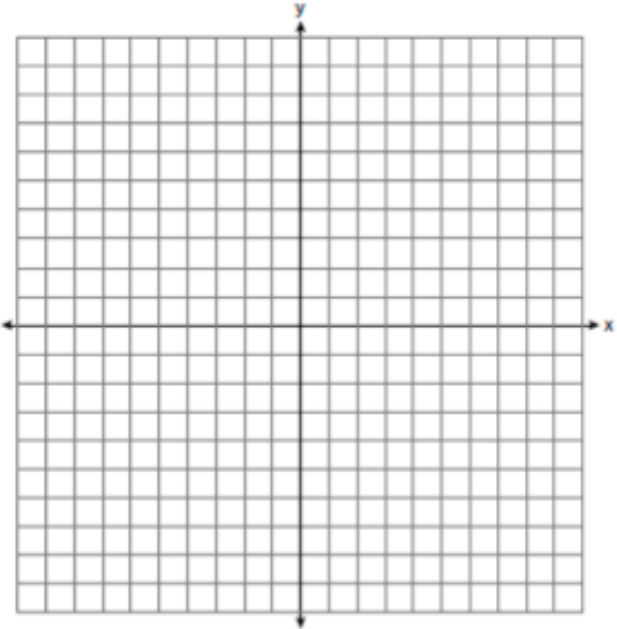
0 solutions
Parallel Lines lines

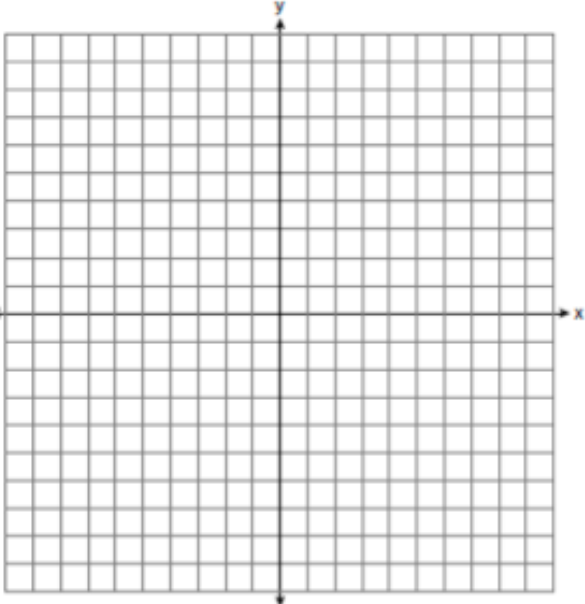


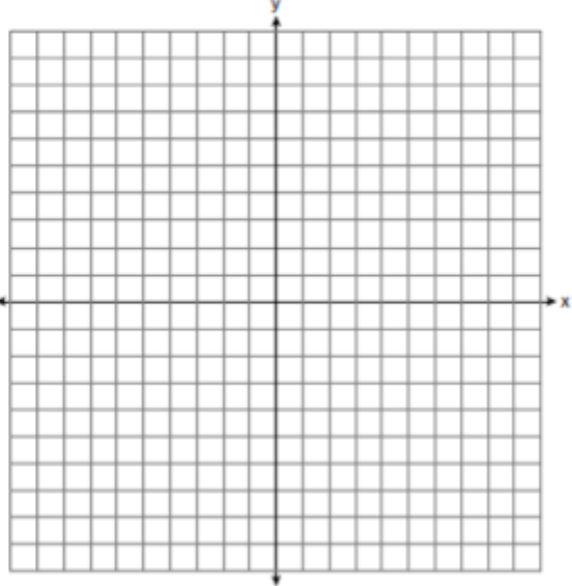
An infinite
number of solutions
Coinciding lines
(The same line)

<p>Name: _____</p>	<p>Solving a System of Linear Equations in Two Variables</p>																																				
<p>Graphing Graph the system of linear equations to find the solution: $y = 5x + 1$ $y = x - 3$</p> <div style="text-align: center;">  </div>	<p>Algebraic Method Solve the linear system using substitution. (use your solution to help choose the numbers for x in your table)</p> <p>$Y = 5x + 1$ $Y = x - 3$</p>																																				
<p>Solve the linear system with a numerical method</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;">x</td> <td style="border: 1px solid black; padding: 5px;">$5x + 1$</td> <td style="border: 1px solid black; padding: 5px;">y</td> <td style="border: 1px solid black; padding: 5px;">x</td> <td style="border: 1px solid black; padding: 5px;">$x - 3$</td> <td style="border: 1px solid black; padding: 5px;">y</td> </tr> <tr><td style="border: 1px solid black; height: 20px;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td></tr> <tr><td style="border: 1px solid black; height: 20px;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td></tr> <tr><td style="border: 1px solid black; height: 20px;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td></tr> <tr><td style="border: 1px solid black; height: 20px;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td></tr> <tr><td style="border: 1px solid black; height: 20px;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td></tr> </table> <p>Solution:</p>	x	$5x + 1$	y	x	$x - 3$	y																															<p>Verbal</p> <ol style="list-style-type: none"> 1) What is the solution of this system? 2) Explain what the solution means in a sentence. 3) Which method did you find the easiest between graphing and substitution? Why?
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<p>Name: _____</p>	<p>Solving a System of Linear Equations in Two Variables</p>																																				
<p>Graphing Graph the system of linear equations to find the solution: $-3x + y = -2$ $Y = x + 6$</p> 	<p>Substitution Solve the system of linear equations by substitution. $-3x + y = -2$ $Y = x + 6$</p>																																				
<p>Solve the linear system with a numerical method</p> <table border="1"> <thead> <tr> <th>x</th> <th></th> <th>y</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>x</th> <th></th> <th>y</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>Solution:</p>	x		y																x		y																<p>Verbal</p> <ol style="list-style-type: none"> 1) What is the solution of this system? 2) Explain what the solution means in a sentence. 3) Which method did you find the easiest between graphing and substitution? Why?
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Name: _____	Solving a System of Linear Equations in Two Variables
<p>Graphing Graph the system of linear equations to find the solution: $2x + 4y = -4$ $2x + y = 8$</p> 	<p>Substitution Solve the system of linear equations by substitution. $2x + 4y = -4$ $2x + y = 8$</p>
<p>Elimination/Linear Combination Solve the system of equations by elimination/linear combination. $2x + 4y = -4$ $2x + y = 8$</p>	<p>Verbal</p> <ol style="list-style-type: none">1) What is the solution of this system?2) Which method did you find the easiest? Why?3) Compare and contrast each method to solve this system.

Name: _____	Solving a System of Linear Equations in Two Variables
<p>Graphing Graph the system of linear equations to find the solution: $3y + x = -1$ $4x + 12y = 0$</p> 	<p>Substitution Solve the system of linear equations by substitution. $3y + x = -1$ $4x + 12y = 0$</p>
<p>Elimination/Linear Combination Solve the system of equations by elimination/linear combination. $3y + x = -1$ $4x + 12y = 0$</p>	<p>Verbal</p> <ol style="list-style-type: none"> 1) What is the solution of this system? 2) Explain what the solution means in a sentence. 3) Which method did you find the easiest? Why? 4) What step(s) must you take before you can use the elimination/linear combination method for this example?

Name: _____	Solving a System of Linear Equations in Two Variables		
<p style="text-align: center;">Solving a System of Linear Equations in Two Variables</p> <p>Use a different method to solve each system...your choice.</p>	$x + y = 9$ $y = 2x - 6$	$y = 5x + 4$ $y = 2x + 7$	$3x + 5y = 10$ $x - 5y = -10$
<p>Graph:</p> 	Substitution:		
Elimination/Linear Combination:	<p>Verbal</p> <p>1) For each system, which method did you choose to solve them?</p>		